

How Artificial Intelligence Is Shaping Medical Imaging Technology: A Survey of Innovations and Applications

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Abstract

The integration of artificial intelligence (AI) into medical imaging has guided in an era of transformation in healthcare. This literature review explores the latest innovations and applications of AI in the field, highlighting its profound impact on medical diagnosis and patient care. The innovation segment explores cutting-edge developments in AI, such as deep learning algorithms, convolutional neural networks, and generative adversarial networks, which have significantly improved the accuracy and efficiency of medical image analysis. These innovations have enabled rapid and accurate detection of abnormalities, from identifying tumors during radiological examinations to detecting early signs of eye disease in retinal images. The article also highlights various applications of AI in medical imaging, including radiology, pathology, cardiology, and more. AI-based diagnostic tools not only speed up the interpretation of complex images but also improve early detection of disease, ultimately delivering better outcomes for patients. Additionally, AI-based image processing facilitates personalized treatment plans, thereby optimizing healthcare delivery. This literature review highlights the paradigm shift that AI has brought to medical imaging, highlighting its role in revolutionizing diagnosis and patient care. By combining cutting-edge AI techniques and their practical applications, it is clear that AI will continue shaping the future of healthcare in profound and positive ways.